

CLAIMS

1. A network relay device connected to a first communications network and a second communications network with which said device can transmit data after securing a communications resource, said device including a first network interface where said device is connected to the first communications network and a second network interface where said device is connected to the second communications network,

said device comprising:

an event/state detecting section for detecting an event and/or a state regarding the first communications network via the first network interface;

a communications resource determination section for determining a communications resource to be obtained, changed, or released in the second communications network, in accordance with the event and/or the state, regarding the first communications network, detected by the event/state detecting section; and

a communications resource management section for obtaining, changing, or releasing a communications resource in the second communications network via the second network interface on the basis of the communications resource calculated by the communications resource

determination section.

2. The network relay device according to claim 1,
wherein:

5 the first communications network is a communications
network with which said device can transmit data after
securing a communications resource, and

10 the event and/or the state, regarding the first
communications network, detected by the event/state
detecting section is obtaining, change, or release of a
communications resource in the first communications
network, or a communications resource obtaining state, for
data to be transferred between the first communications
network and the second communications network.

15 3. The network relay device according to claim 1,
wherein:

20 the event and/or the state, regarding the first
communications network, detected by the event/state
detecting section is reception or completed reception of data
itself to be transferred from the first communications network
to the second communications network.

25 4. The network relay device according to any one of
claims 1 through 3, wherein:

the communications resource determination section calculates, on the basis of the amount of communications resource obtained by measurement of the data received from the first communications network, the communications resource in the second communications network.

5. The network relay device according to any one of claims 1 through 3, wherein:

the first communications network is a communications network with which said device can transmit data after securing a communications resource, and

the communications resource determination section calculates a communications resource in the second communications network, on the basis of a communications resource obtained, changed, or released in the first communications network.

6. The network relay device according to claim 5, wherein:

the communications resource determination section estimates a bandwidth of data transmitted through the communications resource obtained, changed, or released in the first communications network, and then calculates the communications resource in the second communications network on the basis of the estimated bandwidth.

7. The network relay device according to any one of claims 1 through 6, wherein:

5 the communications resource determination section calculates the communications resource to be secured in the second communications network, with consideration of a property of the second communications network.

10 8. The network relay device according to claim 7, wherein:

15 the communications resource determination section calculates a communications resource to be secured in the second communications network, on the basis of (i) a communications resource required for normal data transmission in the second communications network and (ii) a communications resource required for data retransmission.

9. The network relay device according to any one of claims 1 through 8, further comprising:

20 a communications state detecting section for detecting a communications state in the second communications network, wherein:

25 the communications resource management section changes the communications resource secured in the second communications network, in accordance with a change in

communications state in the second communications network.

10. The network relay device according to claim 9,
wherein:

5 the communications state detecting section detects an
error rate of data transmission in the second communications
network, and if the error rate exceed a given value, the
communications resource management section increases a
communications resource obtained in the second
10 communications network.

11. The network relay device according to claim 9 or 10,
wherein:

15 the communications state detecting section detects a
data communications time in the second communications
network, and as a result of comparison between the data
communications time and a time given by an already allocated
communications resource, the communications resource
management section changes the communications resource
20 obtained in the second communications network.

12. The network relay device according to any one of
claims 1 through 11, comprising:

25 a network management section for detecting a
communications resource management station which manages

a communications resource in the second communications network,

wherein:

5 from which communications station on the second communications network serves as the communications resource management station, detected by the network management section, the communications resource management section judges whether said network relay device is to obtain, change, or release a communications resource or
10 is to request other communications station on the second communications network to obtain, change, or release a communications resource.

13. The network relay device according to any one of
15 claims 1 through 12, wherein:

the event/state detecting section receives information on network state from other communications device connected to the first network.

20 14. The network relay device according to any one of claims 1 through 12, wherein:

the event/state detecting section requests information on network state to other communications device connected to the first network.

15. The network relay device according to claim 14,
wherein:

the event/state detecting section checks a network state
in the first communications network at regular intervals.

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16. The network relay device according to claim 13,
wherein:

the event/state detecting section checks a network state
in the first communications network upon receipt of
10 notification of a predetermined event from the first
communications network.

17. The network relay device according to any one of
claims 1 through 16, wherein:

15 the communications resource management section
obtains, changes, or releases a communications resource in
the second communications network, after a lapse of a given
time from detection of a network state in the first
communications network.

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18. The network relay device according to claim 1,
wherein:

the event/state detecting section detects, as a network
state in the first communications network, the presence or
25 absence of other entity which communicates data with said

device in the first communications network.

19. The network relay device according to claim 1, wherein:

5 the event/state detecting section detects, as a network state in the first communications network, a connection established state in the first communications network.

20. A network relay device, connected to (i) a first
10 communications network with which said device can transmit data after securing a communications resource and (ii) a second communications network having a property which is different from that of the first communications network, said device including a first network interface where said device is
15 connected to the first communications network and a second network interface where said device is connected to the second communications network,

 said device comprising:

20 a network component to which other communications station connected to the first communications network makes access so as to secure a communications resource on the first communications network; and

 a connection management section for controlling availability/unavailability of the network component.

21. The network relay device according to claim 20,
wherein:

the connection management section notifies change in
availability/unavailability of the network component to said
5 other communication station, or issues a trigger which
notifies the change.

22. The network relay device according to any one of
claims 1 through 21, wherein:

10 the first communications network or the second
communications network is in conformity with IEEE1394.

23. The network relay device according to any one of
claims 1 through 21, wherein:

15 the first communications network or the second
communications network is a wireless network.

24. The network relay device according to claim 16,
wherein:

20 the first communications network is in conformity with
IEEE1394, and

an event notified from the first communications network
is a bus reset defined by the IEEE1394.

25 25. The network relay device according to claim 2,

wherein:

the first communications network is in conformity with IEEE1394, and

as a resource obtaining state in the first
5 communications network, used is a value of
BANDWIDTH_AVAILABLE or CHANNELS_AVAILABLE register
held by an Isochronous Resource Manager in the first
communications network.

10 26. The network relay device according to claim 19,
wherein:

the first communications network is in conformity with IEEE1394, and

as the connection established state in the first
15 communications network, used is a connection counter value
of a Plug Control Register held by a data transmitting station
or data receiving station in the first communications network.

20 27. The network relay device according to claim 20 or 21,
wherein:

the network component is any one of a register, a Plug
Control Register, and a 1394 node.

25 28. A network relay program causing a computer to
execute an operation of the network relay device according to

any one of claims 1 through 27.

29. A storage medium containing a network relay
program causing a computer to execute an operation of the
5 network relay device according to any one of claims 1 through
27.